

Snake River Chinook and Steelhead Transport Studies



**National Marine
Fisheries Service**

2007 Research Objectives

Transportation vs. in-river migration study – yearling and subyearling Chinook salmon and steelhead

- 2007 juvenile tagging
- adult returns from yearling Chinook salmon and steelhead tagging in 2004-2006 and fall Chinook salmon tagging in 2002-2006

Wild Yearling Chinook Salmon Studies

2004 Wild S/S Chinook Salmon

Juvenile tagging

- Tagged only a barge group; Used BPA survival fish as in-river fish

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- Total release numbers

LWG Transport	10,796
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Released to LWG tailrace	9,226
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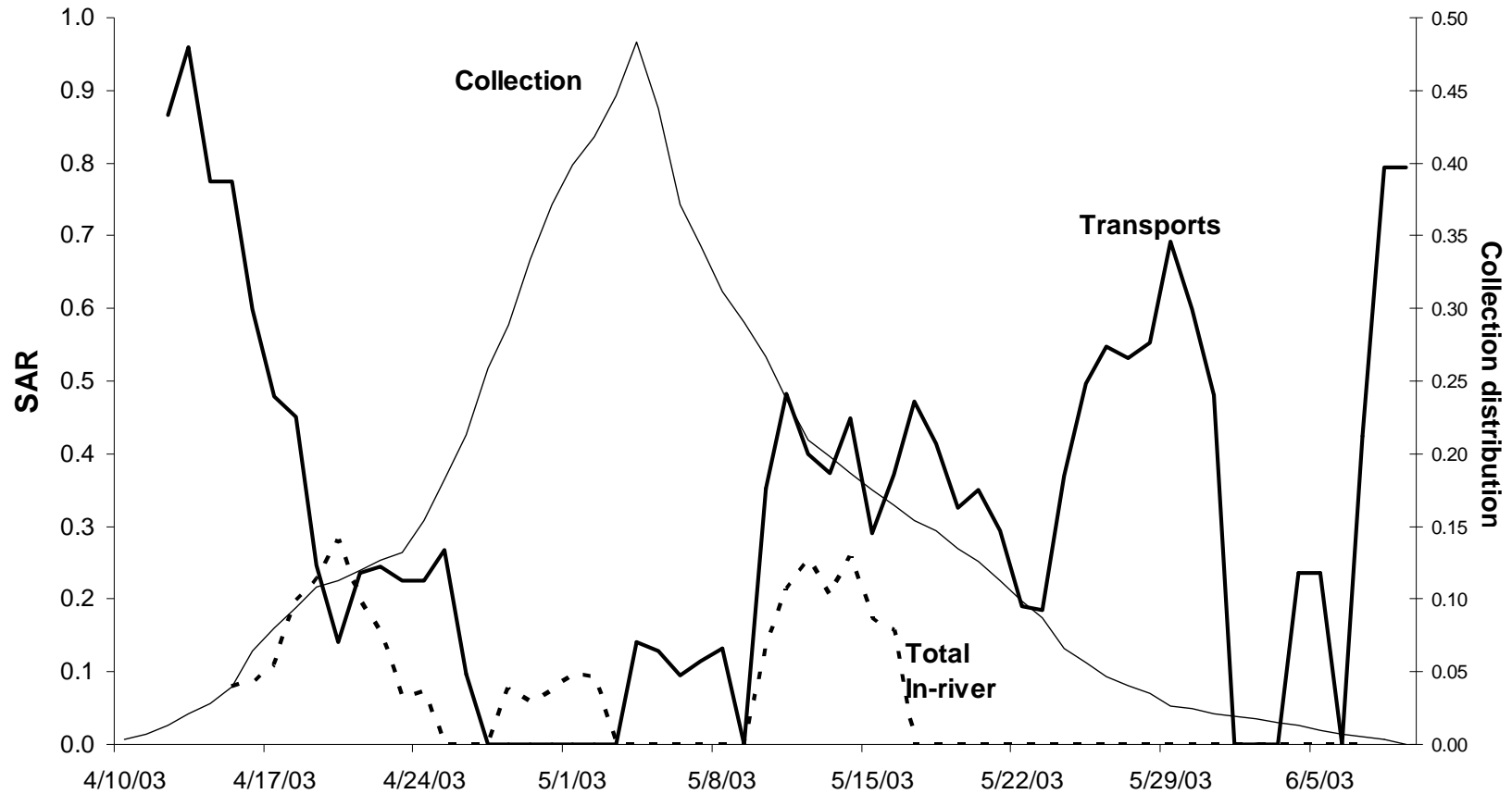
Non-detected (Migrant)	1,140
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Total in-river (In-river)	8,994
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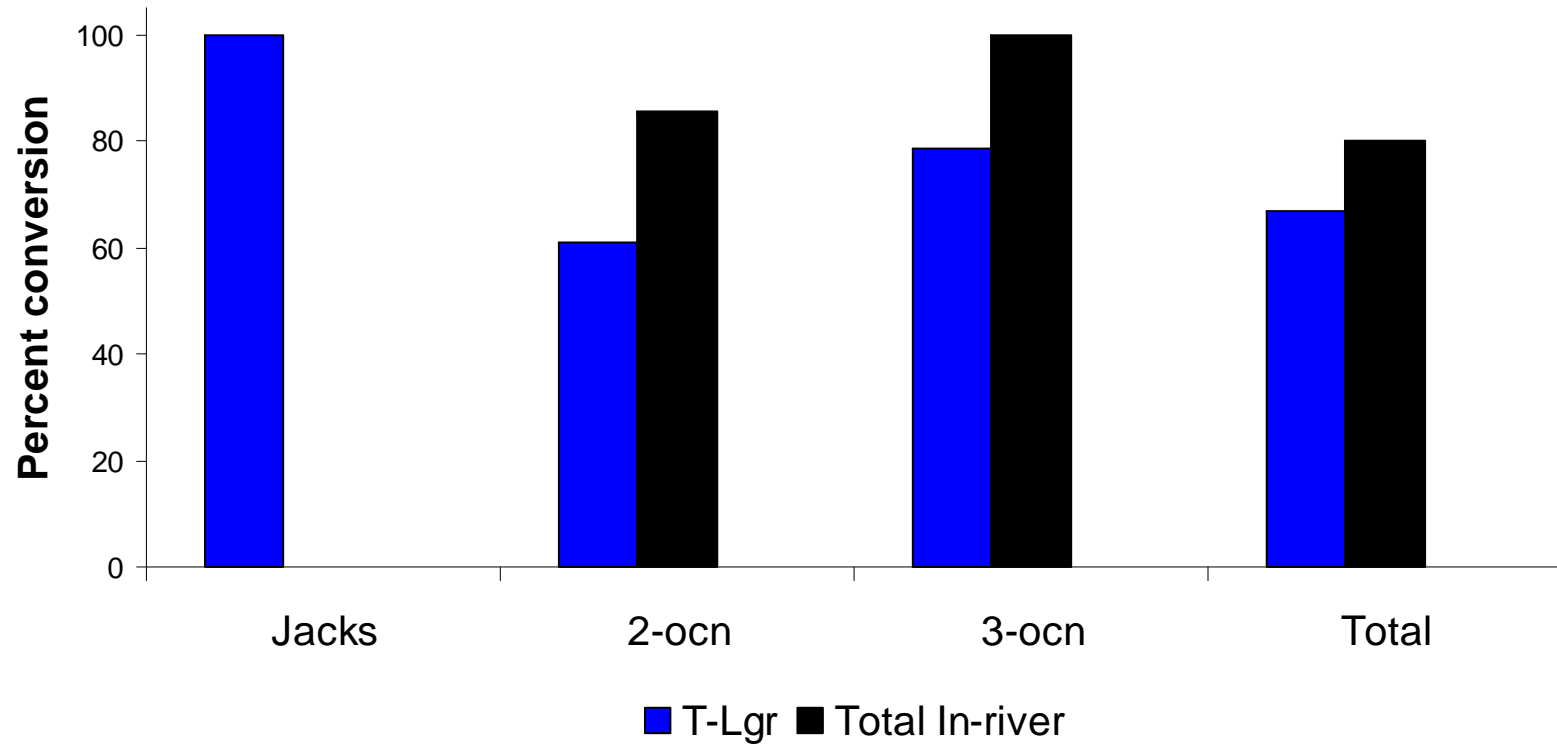
2004 Wild S/S Chinook Salmon

	Juvenile numbers	<u>Returns by Age-class</u>			SAR	T/I
		Jack	2-ocn	3-ocn		
Transport	10,796	2	25	13	0.37	
Migrant	1,140	0	0	0	0.00	
In-river	8,994	0	5	2	0.09	4.76 (2.17, 13.01)

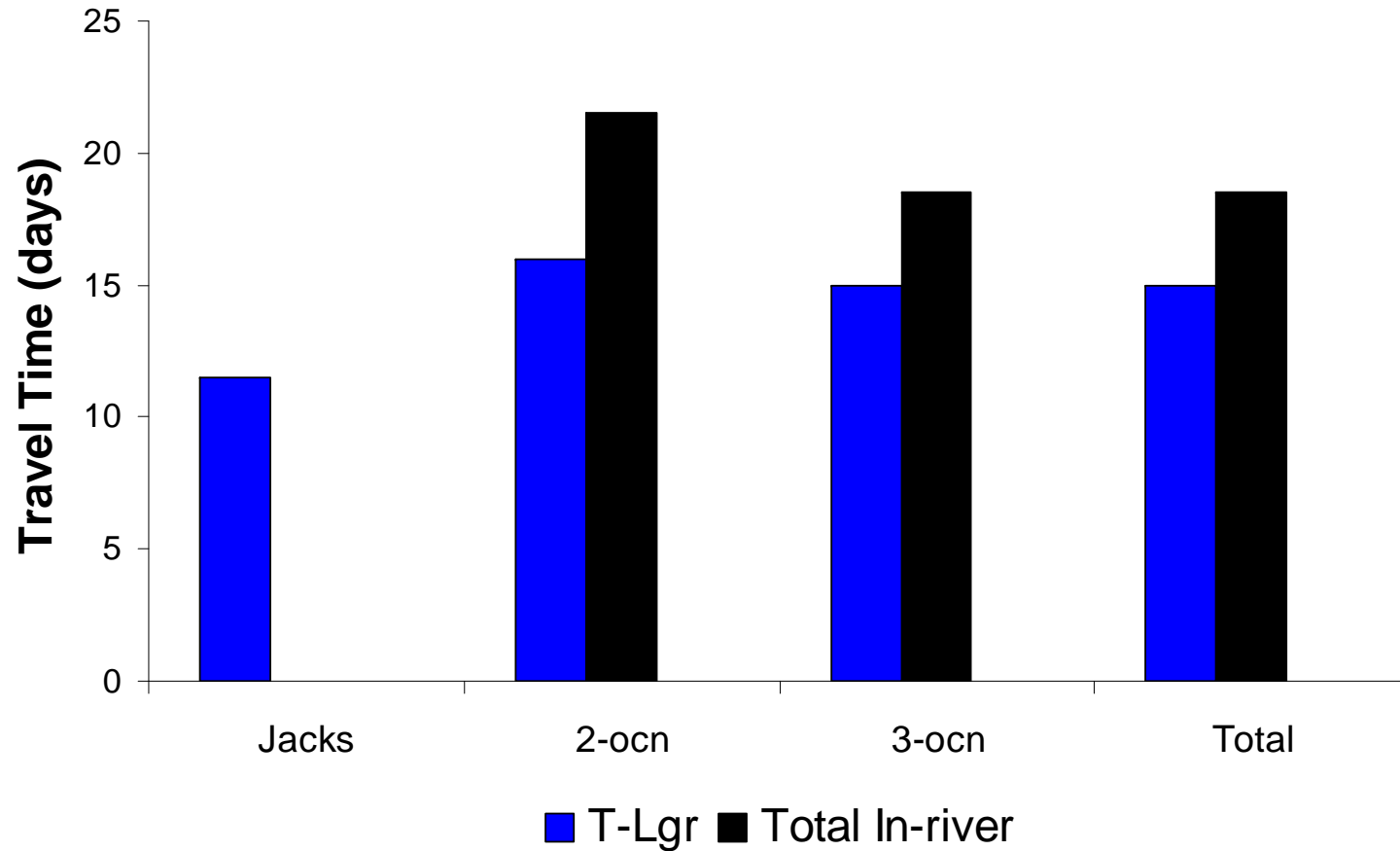
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Conclusions:

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Conclusions:

- Fish transported from LWG returned at higher rates than total in-river fish; not comparable to past studies with non-detected fish
- Overall adult conversion rates from BON to LWG were lower for transported fish
- Overall adult median travel times from BON to LWG were shorter for transported fish; varied by age class

Wild Steelhead Studies

2004 Wild Steelhead

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- Total release numbers

LWG Transport	7,990
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Released to LWG tailrace	27,767
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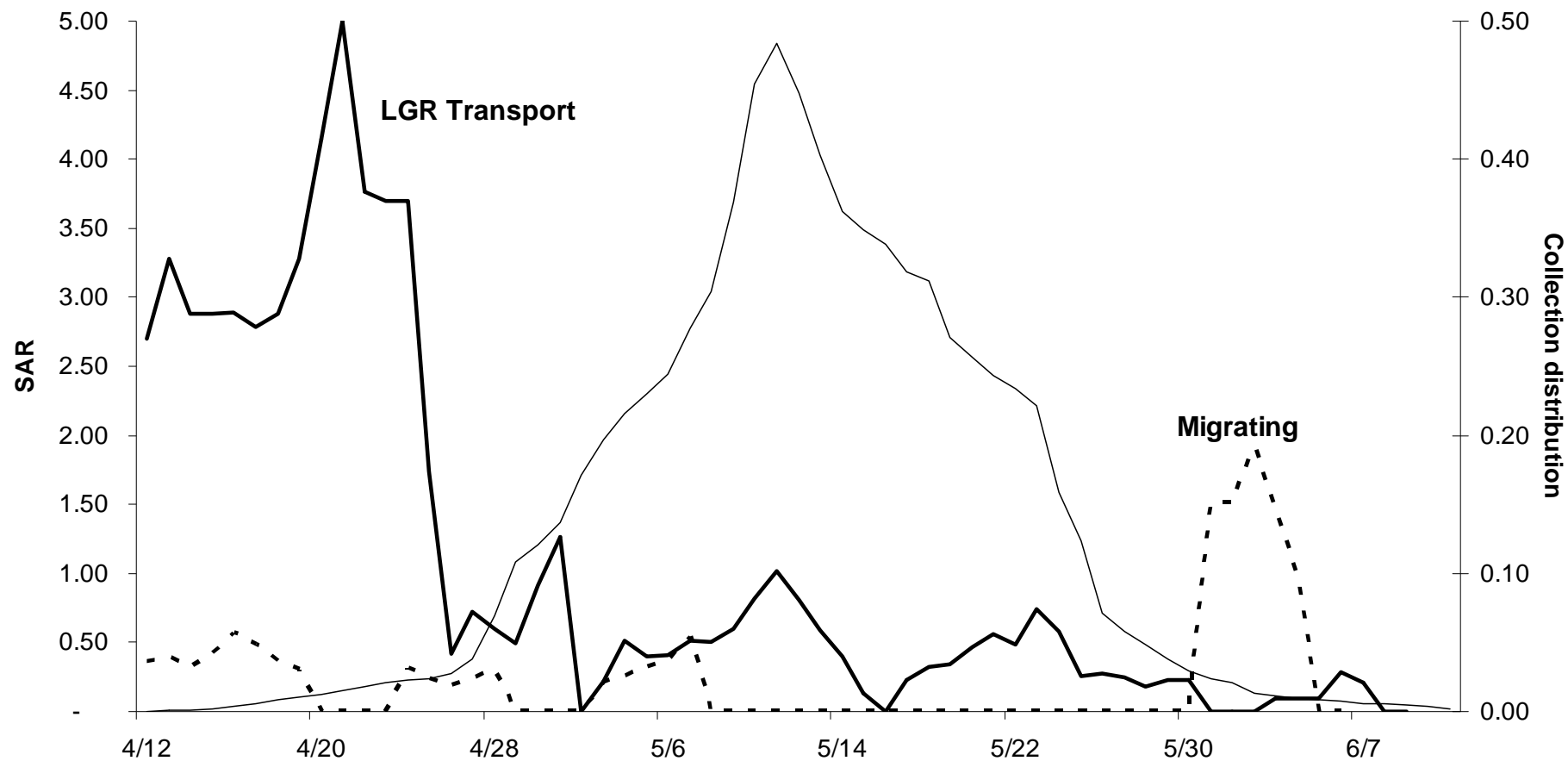
Non-detected (Migrant) (H&W)	2,773
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Total In-river (H&W)	26,471
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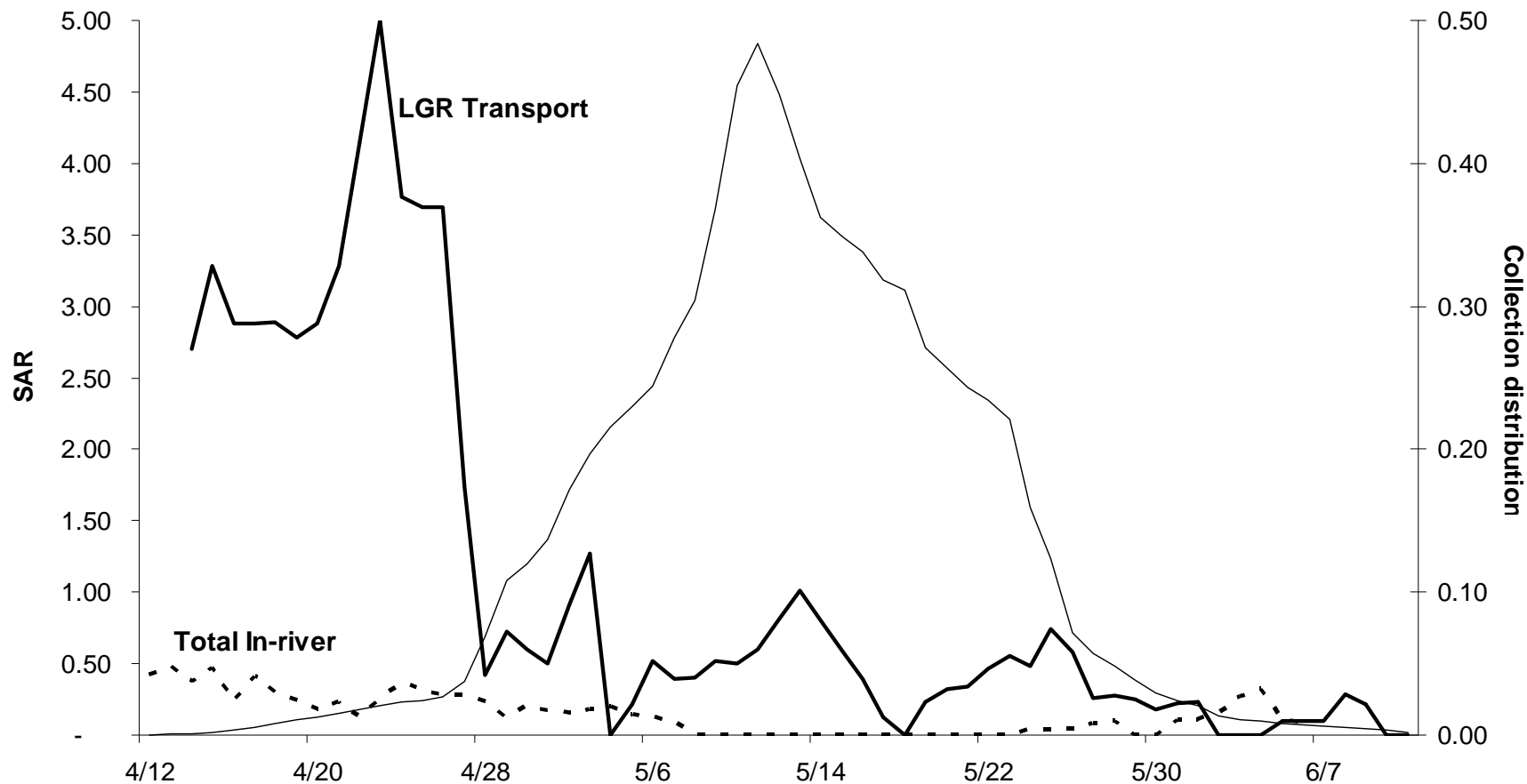
2004 Wild Steelhead

	Juvenile numbers	<u>Returns by Age-class</u>			SAR	T/I
		1-ocn	2-ocn	3-ocn		
Transport	7,990	37	35	-	0.90	
Migrant (H&W)	2,773	7	3	-	0.36	2.50 (1.61, 7.61)
Total In-river (H&W)	26,471	22	13	-	0.13	6.82 (5.22, 9.13)

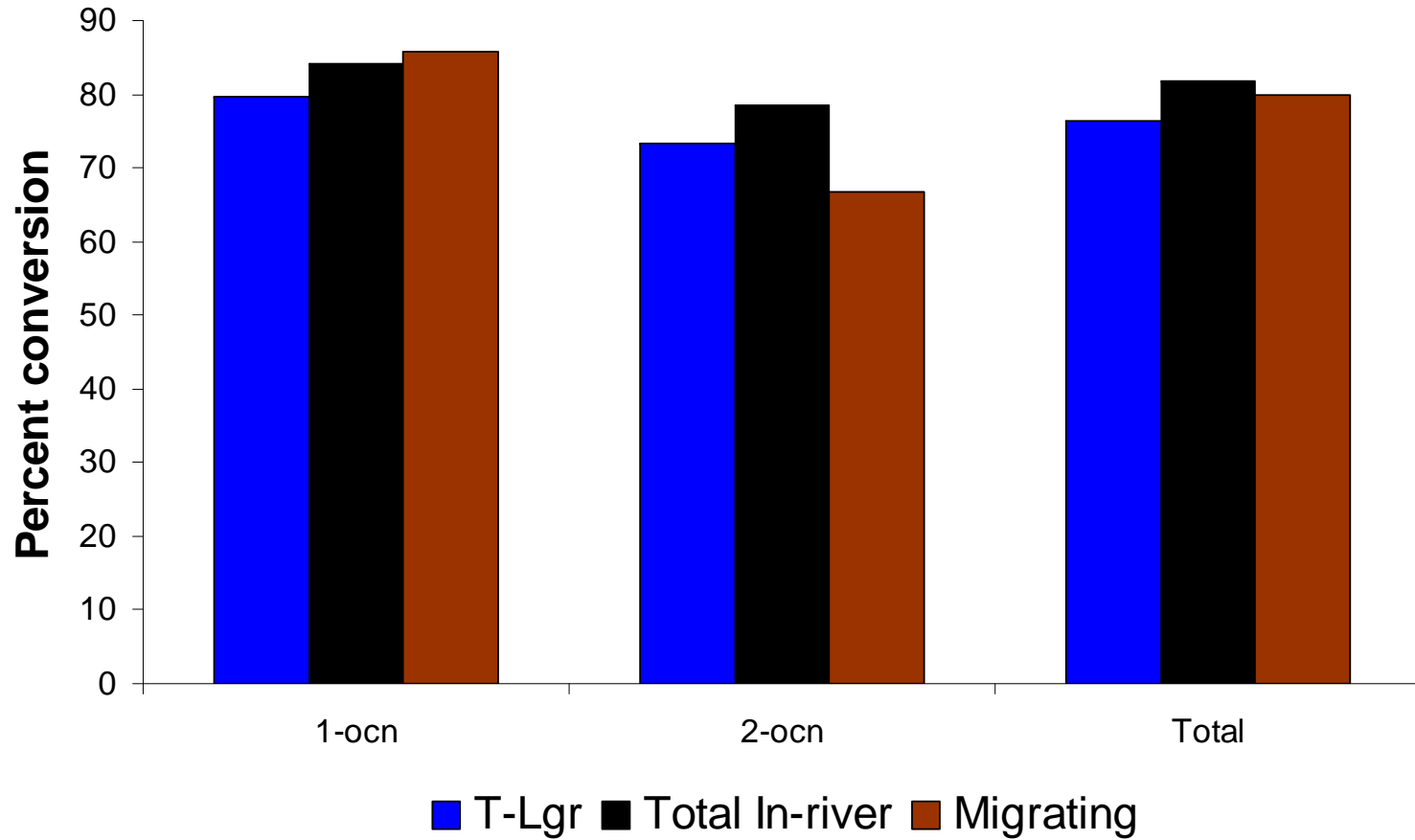
2004 Wild Steelhead



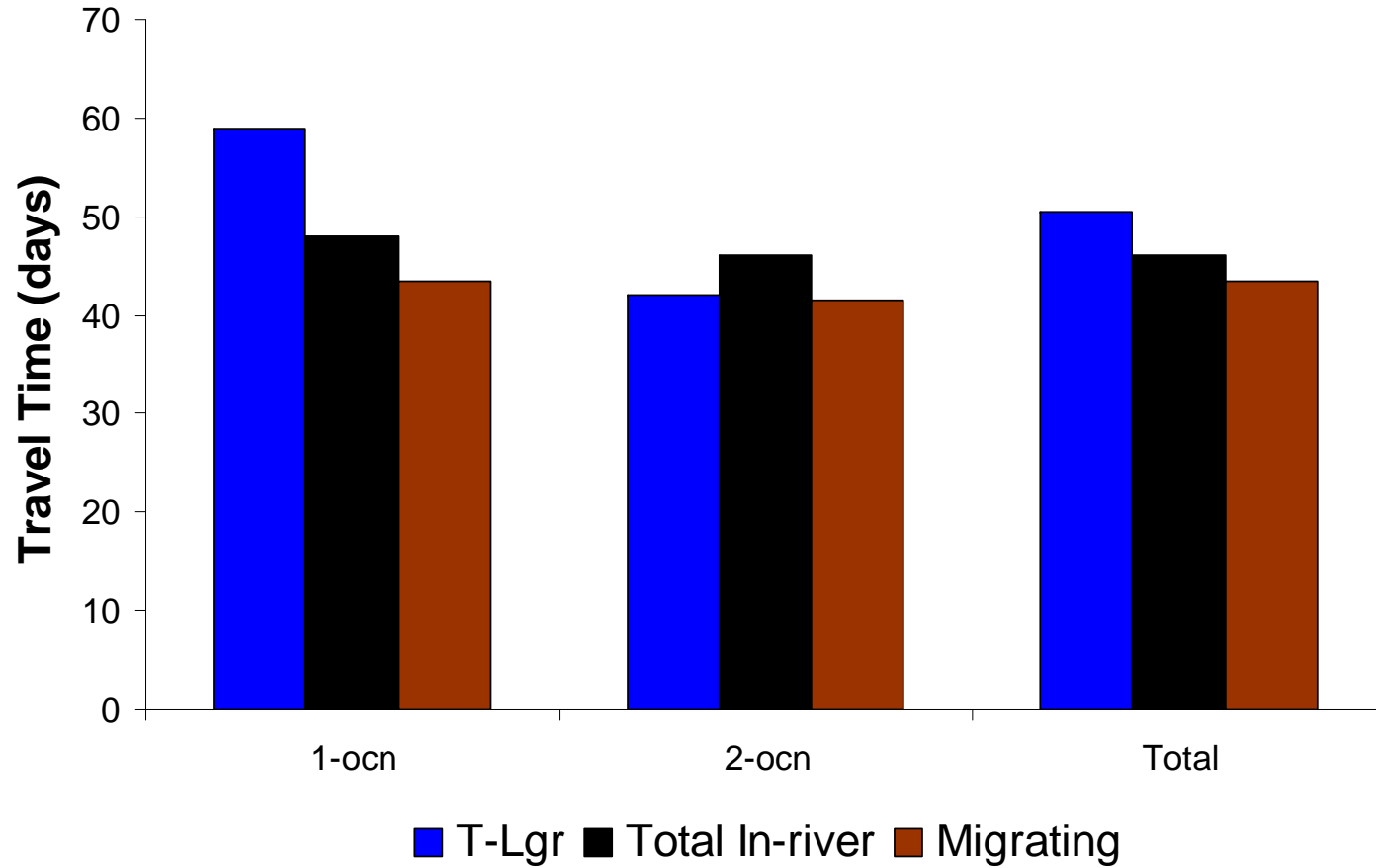
2004 Wild Steelhead



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2004 Wild Steelhead

Age- Class	Group	Total LWG adult numbers	Percent detected in Spring
1-ocn	Transport	37	2.7
	Migrant	7	0
	Total In-river	22	0
2-ocn	Transport	35	2.9
	Migrant	3	0
	Total In-river	13	0

2004 Wild Steelhead

Age- Class	Group	MCN adult numbers	Number strayed	Stray %
1-ocn	Transport	37	1	2.7
	Migrant	7	0	0
	Total In-river	24	0	0
2-ocn	Transport	38	1	2.6
	Migrant	3	0	0
	Total In-river	14	0	0
Total	Transport	75	2	2.7
	Migrant	10	0	0
	Total In-river	38	0	0

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- Wild fish transported from LWG returned at higher rates than non-transported wild and hatchery fish
- Overall adult conversion rates from BON to LWG were similar for all three groups
- Adult median travel times from BON to LWG were slower for transported fish

Fall Chinook Salmon Studies

2002 Fall Chinook Salmon Study

Juvenile tagging

- Study design

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 - PIT-tagged from 29 May to 14 June 2002 at Lyons Ferry Hatchery

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 - tagged ROR fish in Sept. and Oct. at LWG

2002 Fall Chinook Salmon Study

Juvenile tagging

- Study design
- Number of juveniles in each hatchery study group
 - Transport (from LWG) 12,315
 - Not-detected (not adjusted) 75,235

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 - migration outside of detection window
 - majority of returning fish entered ocean as yearlings
 - unknown wintering location for majority of yearling ocean entrants

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Juvenile tagging

- Study design
- Number of juveniles in each hatchery study group
 - Transport (from LWG) 12,315
 - Not-detected (not adjusted) 75,235
- Number of juveniles tagged at LWG in fall
 - Transport (from LWG) 2,500

2002 Fall Chinook Salmon Study

Juvenile tagging

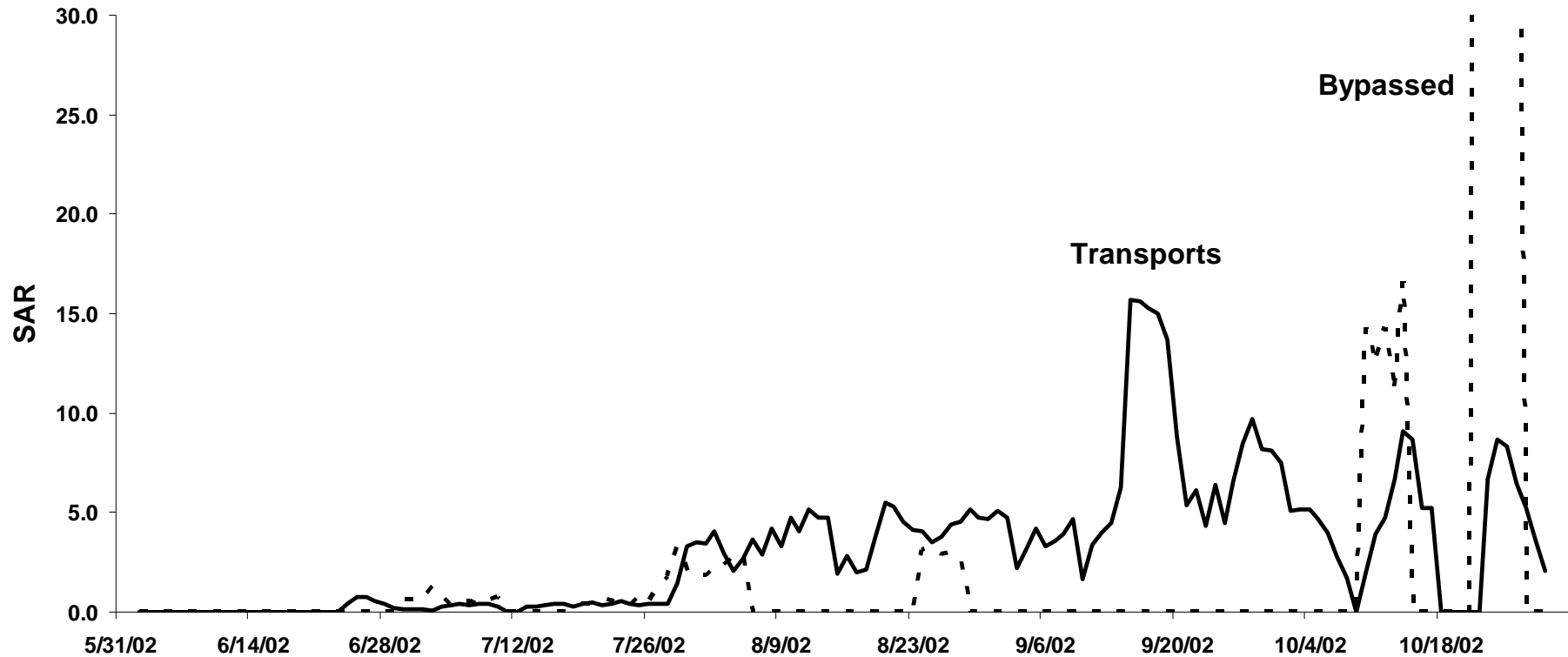
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- Number of juveniles in each hatchery study group
 - Transport (from LWG) 12,315
 - Not-detected (not adjusted) 75,235
- Number of juveniles tagged at LWG in fall
 - Transport (from LWG) 2,500
- Outbreak of bacteria gill disease

2002 Fall Chinook Salmon Study

	Juvenile numbers	Jacks	<u>Returns by Age-class</u>				SAR	T/I
			2-ocn	3-ocn	4-ocn	5-ocn		
Transport	12,315	34	55	24	8	0	0.98	xxx
Transport (Fall)	2,500	42	47	24	9	0	4.88	
Not-detected	75,235	21	46	23	3	0	xxx	
Bypassed	3,201	9	11	1	0	0	0.66	

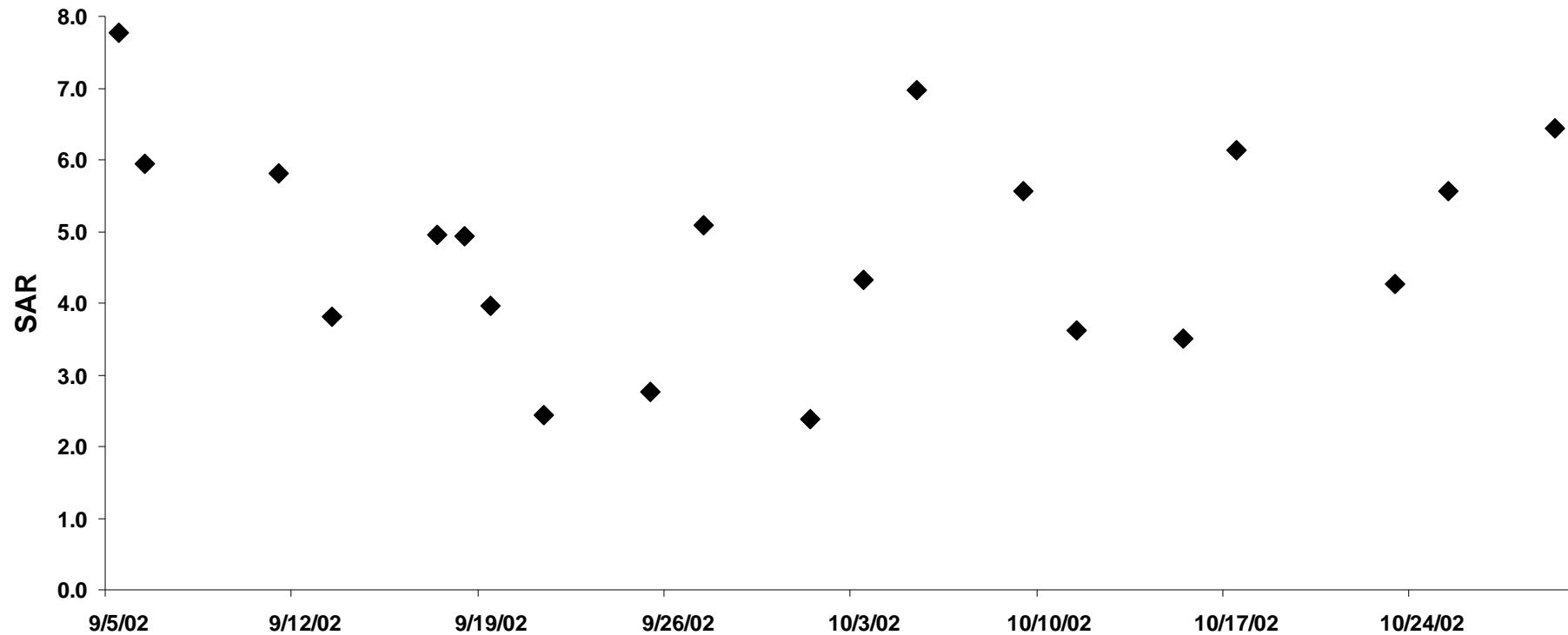
2002 Fall Chinook Salmon Study

- Surrogates from Lyons Ferry

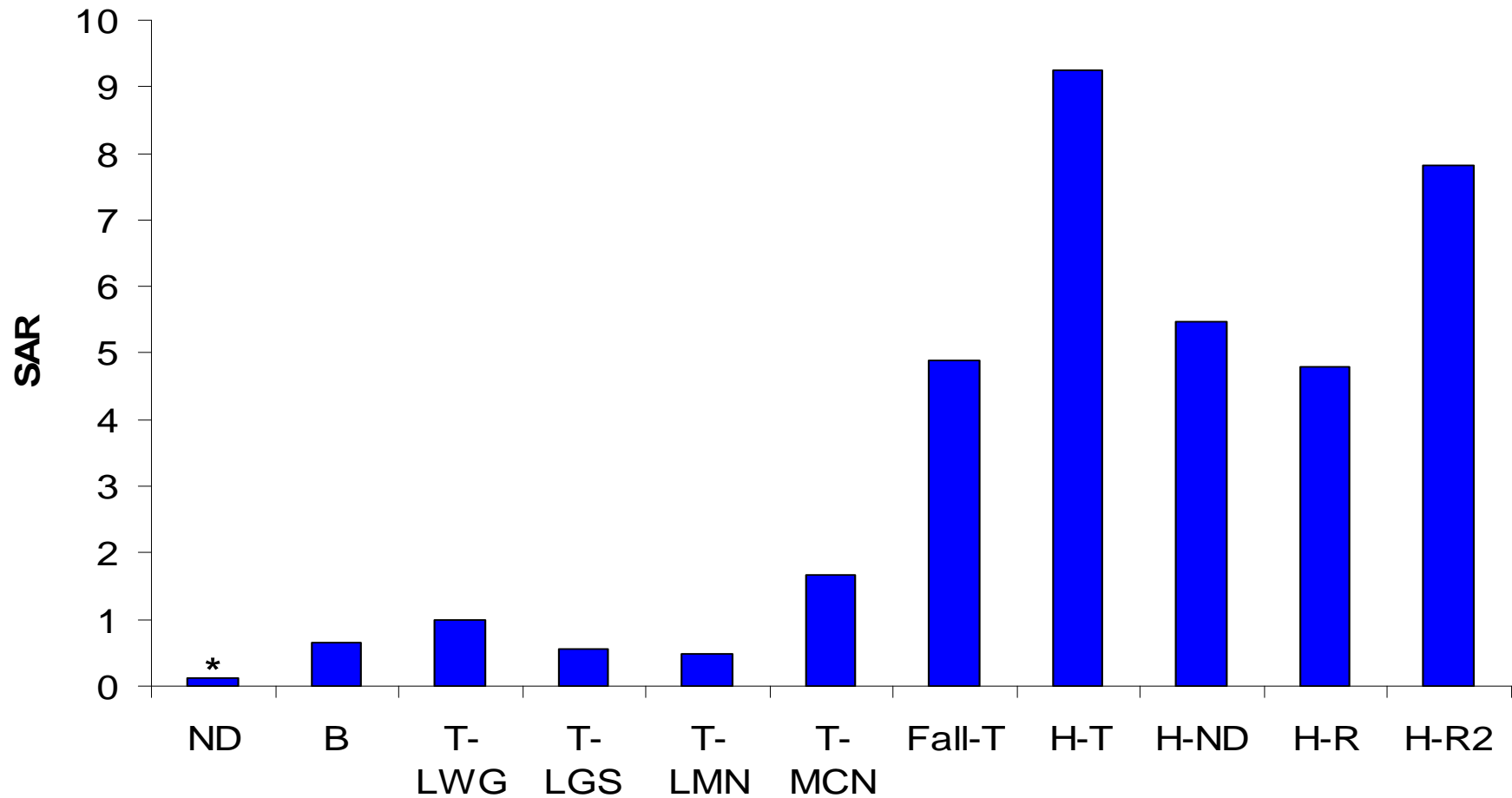


2002 Fall Chinook Salmon Study

– Tagged at LWG in fall

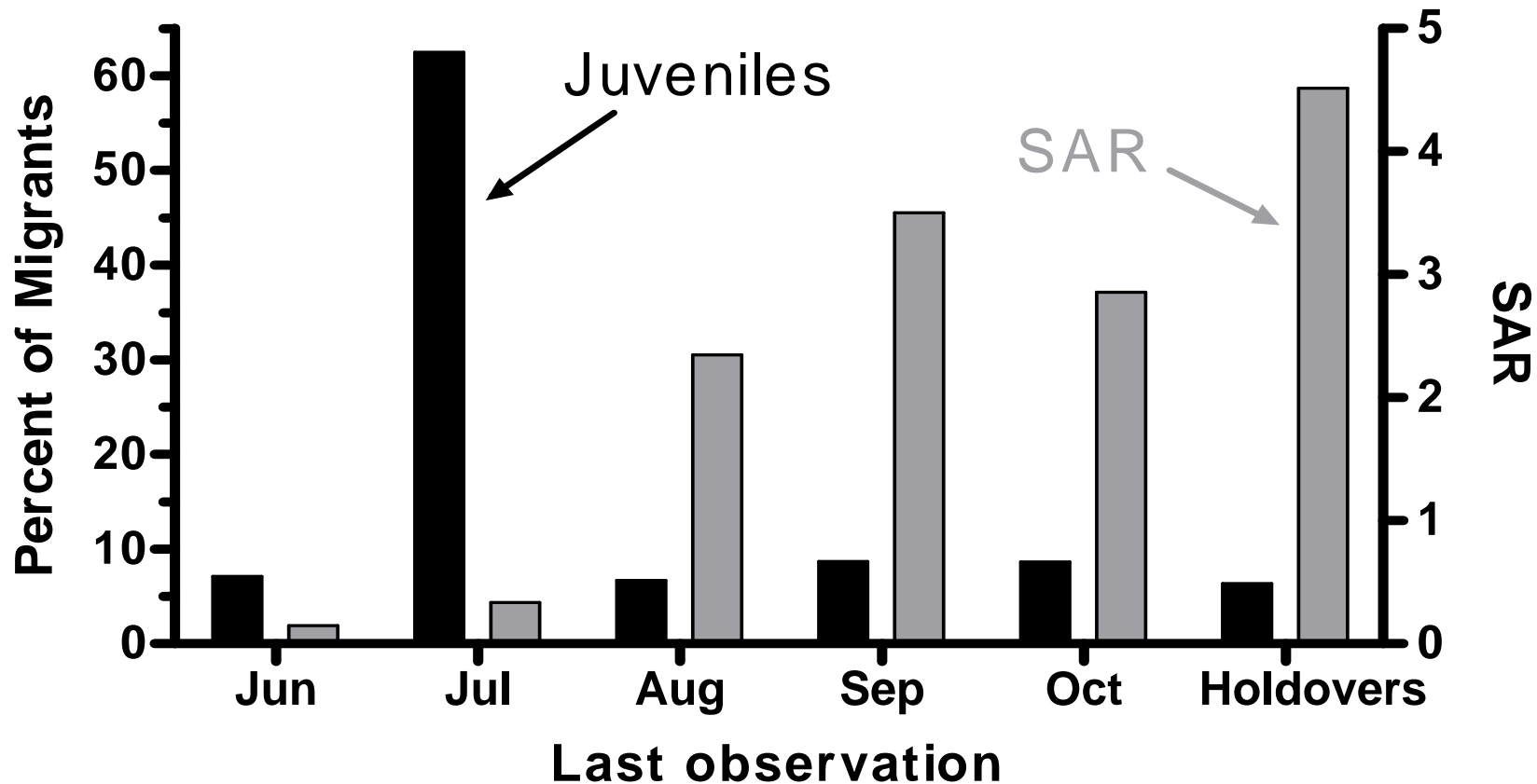


2002 Fall Chinook Salmon Study

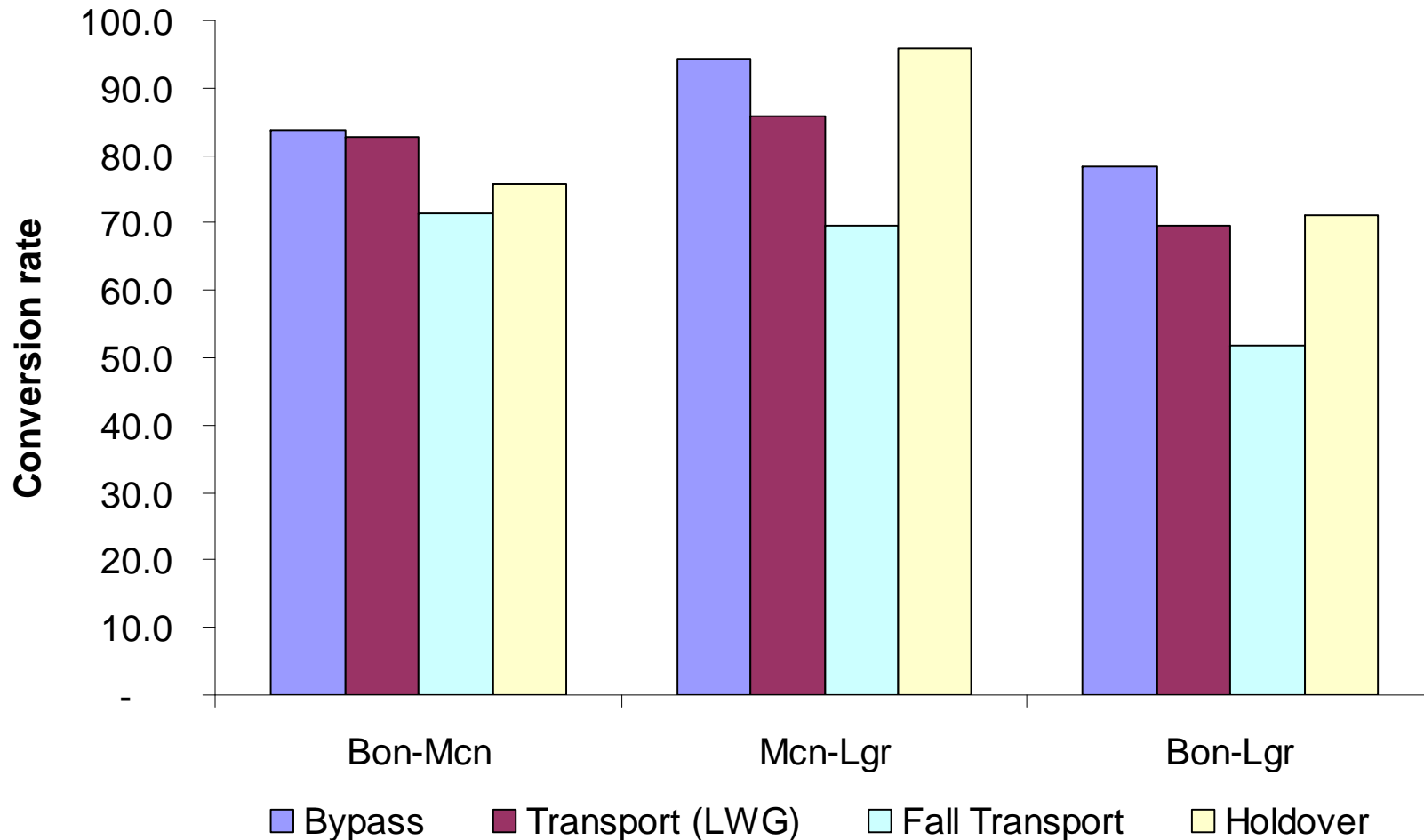


2002 Fall Chinook Salmon Study

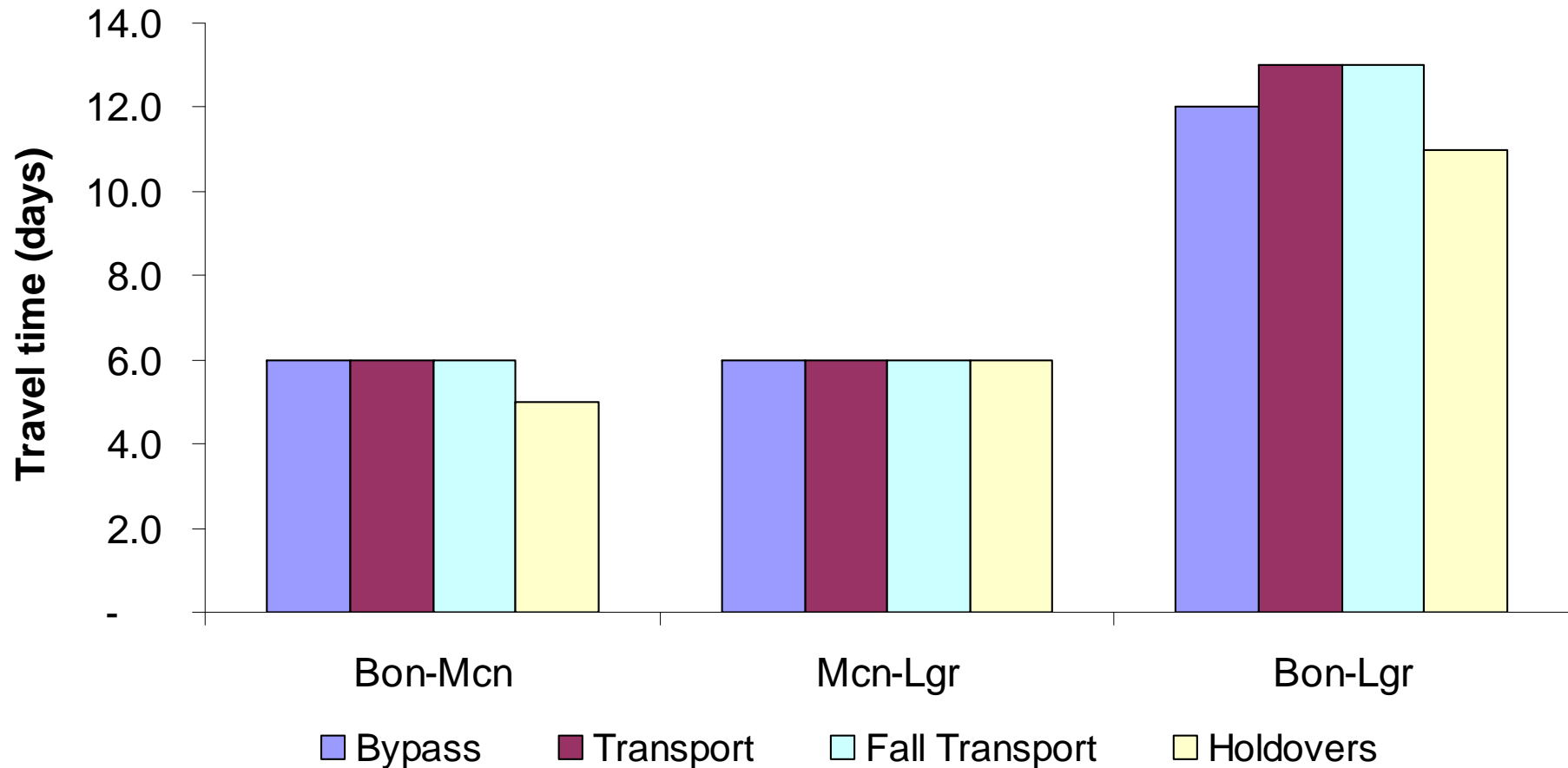
– Surrogates from Lyons Ferry Hatchery



2002 Fall Chinook Salmon Study



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Conclusions:

- ???????



2006 5 7

2007 Juvenile tagging operations

		Number tagged		
		Transports		Migrants
		LWG	LGS	
- Lower Granite Dam Spring studies				
- Wild spring/summer Chinook salmon		11,993	--	--
- Wild steelhead		9,433	--	--

2007 Juvenile tagging operations

	Number tagged		
	Transports		Migrants
	LWG	LGS	
- Lower Granite Dam Spring studies			
- Wild spring/summer Chinook salmon	11,993	--	--
- Wild steelhead	9,433	--	--
- BPA Survival studies			
- Wild spring/summer Chinook salmon	--	--	14,618
- Wild steelhead	--	--	11,286
- Hatchery steelhead	--	--	19,375



Snake River Transport studies in-progress

Tagging year	Juvenile numbers			Returns by age-class		
	Transports					
	LWG	LGS	Migrants	Jacks	2-ocn	3-ocn
<u>LWG Spring/summer Chinook salmon</u>						
2006	13,575	—	2,529	8	—	—
2005	12,729	—	1,535	0	21	—
<u>LWG Steelhead</u>						
2006	18,710	—	8,263	134	—	—
2005	10,476	—	3,911	18	19	—

Snake River Transport studies in-progress

Tagging		Returns by age-class				
year	Number tagged	Jacks	2-ocn	3-ocn	4-ocn	5-ocn
<u>Fall Chinook salmon</u>						
2007**	8,718	—	—	—	—	—
2006*	496,595	506	—	—	—	—
2005*	172,784	80	110	—	—	—
2004	51,832	27	27	37	—	—
2003	56,131	56	48	31	6	—

* Co-op NMFS/USFWS(DWOR) study

** The only fish tagged in 2007 were tagged at LWG in Sept. and Oct.